

RECEIVED

MAR 10 2008

Department of Environmental Quality
State Air Program

March 5, 2008

Mr. Bill Rogers
Department of Environmental Quality
State of Idaho
1410 North Hilton
Boise, ID 83706

Dear Mr. Rogers:

RE: Permit To Construct (Portable Source) Application for Fuels Reduction Services

On behalf of Fuels Reduction Services (FRS), Bison Engineering, Inc., is pleased to submit this letter, attached forms, and supporting information, which constitute an application for a Permit To Construct (PTC) for an air curtain burner. FRS intends to use an air curtain burner as a method of disposing of forest slash, without the use of open burning or prescribed wildlands burning. FRS believes this market exists in Idaho, and also believes that the air curtain burner performs this function with substantially lower emissions than open burning.

FRS understands that an air curtain burner may be considered open burning in Idaho (reference: Page 2, "Light it Right" pamphlet on IDEQ website http://www.deq.idaho.gov/air/assist_citizen_comm/light_it_right_brochure_0607.pdf). FRS is pursuing this air quality permit to remove the open burning designation from its air curtain burner. FRS intends the air quality permit to allow operation of its portable unit at any location in the state, without having to obtain open burning permits, and without regard to open burning restrictions or closures.

Required information, as listed in the Department's Air Quality Permit Application Checklist, is provided or otherwise addressed as follows:

Application Forms – Application forms are included as Appendix A to this letter. Included are Form CS: Cover sheet, Form GI: General Information, Form EI-CP1: Facility-Wide Emissions Inventory, Form EUO: General Emissions Unit, Form EU1: Industrial Engine Information, Form MI1: Modeling Information and Form FRA: Federal Requirements Applicability.

Source Description – FRS intends to utilize an Air Burners, LLC Model S-220 air curtain burner at various locations within Idaho. Please refer to the Air Burners LLC specification sheet in Appendix B for details. Detailed descriptions and photos can be found at the manufacturer's website (www.airburners.com).

Source Flow Diagram – Please refer to the Air Burners LLC Technical Memorandum and Specification Sheet in Appendix B for details.

Plot Plans – Since the source is portable and not associated with a specific site, a plot plan has not been prepared.

Emission Inventory - Appendix C to this letter provides a complete emission inventory with calculations and references to emission factors. A summary of this inventory is located on Form EI-CP1.

Emission Inventory References and Documentation – Appendix D to this letter provides updated estimates of emissions from all applicable facility sources. It also describes the methods and reference sources employed to derive the estimates.

Ambient Air Impact Analysis for Criteria Pollutants – Under IDAPA 58.01.01.200, an applicant for a permit to construct is required to prepare an ambient air impact analysis. Since FRS is a relatively small source, a screening model (EPA SCREEN3) was selected to find the ambient impacts from the proposed operation. This model is a simple, overly conservative air quality dispersion model that was used to quickly analyze ambient concentrations of criteria pollutants from the source. If the FRS operation can meet or stay below the Significant Contribution Levels (SCLs), the source is presumed to have no significant impact on the surrounding air and no further modeling is required.

The SCREEN3 model inputs are based on the design parameters for the proposed air curtain burner. For simplicity, the PM₁₀ and NO_x emissions from the diesel engine powering the fan were combined with the larger amount from wood waste combustion in the firebox.

The products of combustion of wood waste from the air curtain incinerator are first released from the stack into ambient air. From that point the model assumes that the concentration pattern within the released plume maintains a steady-state Gaussian distribution. In addition, the model further assumes that there is no decay or mass loss that might otherwise occur due to terrain impaction, chemical transformation, etc.

For purposes of this modeling analysis, the single mass input rate was coded into the SCREEN3 model in order to predict a maximum ground level concentration based on a series of possible meteorological events. A ratio of mass input rate to maximum predicted concentration was used to allow this one model run to provide results for all the criteria pollutants.

The screening model results show that the FRS operation meets the SCLs for all criteria pollutants, and will have no significant impact on the surrounding ambient air. FRS also is exempt from a more refined modeling analysis. See Appendix E for detailed results of the SCREEN3 model runs for the other criteria pollutants. The results are also summarized on Form MI1.

Toxic Air Pollutant (TAP) Emissions Evaluation – IDAPA 58.01.01.007.06.c and the Department's guidance document AZ-CH-P006, "Toxic Air Pollutant (TAP) Preconstruction Compliance Application Completeness Checklist," indicate that TAP



emissions from sources must be analyzed. The potential toxic emissions were identified and quantified in accordance with IDAPA 58.01.01, Sections 210.01 and 210.02 using emission factors published by the US EPA. Following a two-step process, the estimated potential emissions were compared first against applicable regulatory thresholds in accordance with IDAPA 58.01.01, Sections 210.05, 585, and 586. This analysis identified 28 compounds with emission rates below the screening emissions levels (ELs) and 13 compounds with emission rates above the ELs. Emissions of these thirteen compounds were then entered into a screening level dispersion model (similar to that described above) in accordance with IDAPA 58.01.01.210.06, and the resulting peak ambient concentrations compared against screening threshold values provided at IDAPA 58.01.01 Sections 585 and 586.

Results from these analyses demonstrate that emission rates or ambient concentrations of all toxic compounds potentially emitted from the FRS air curtain burner are below applicable threshold limits. Detailed analysis results are included as Appendix F.

Federal Requirements Applicability

FRS has identified one federal rule as potentially applicable to the air curtain burner: Title 40 CFR 60, Subpart CCCC (Standards of Performance for Commercial and Industrial Solid Waste Incineration Units for Which Construction Is Commenced After November 30, 1999, or for Which Modification or Reconstruction Is Commenced on or After June 1, 2001). In order for this subpart to apply to a given source, the incineration unit must meet the following three applicability criteria contained in 40 CFR 60.2010:

- 1) The incineration unit must be a new incineration unit as defined in section 60.2015;
- 2) The incinerator must not be specifically exempt under 40 CFR 60.2020; and
- 3) The incineration unit must be a Commercial and Industrial Solid Waste Incinerator (CISWI) as defined in 40 CFR 60.2265.

In accordance with 40 CFR 60.2015, the FRS air curtain burner meets the definition of a new incinerator thereby meeting criterion 1; however, the FRS air curtain incinerator is specifically exempt under the provision of 40 CFR 60.2020 and thus does not meet criterion 2. Under criterion 3, a CISWI is defined as *any combustion device that combusts commercial and industrial waste, as defined in 40 CFR 60.2265...* By definition, Commercial and Industrial Waste (CIW) means *"solid waste combusted in an enclosed device using controlled flame combustion without energy recovery that is a distinct operating unit of any commercial or industrial facility or solid waste combusted in an air curtain incinerator without energy recovery that is a distinct operating unit of any commercial or industrial facility."* The FRS burner does meet the definition of an air curtain incinerator as defined in 40 CFR 60.2245 and 40 CFR 60.2265. Since the FRS air curtain burner does **not** meet criterion 2 it is exempt from the general requirements



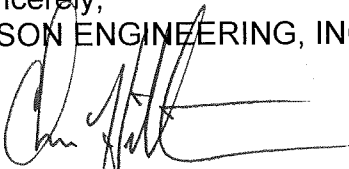
of 40 CFR 60, Subpart CCCC. FRS is subject to a small subset of Subpart CCCC contained in 40 CFR 60.2245-2260.

Previous FRS Permit – FRS understands that this permit may be the first issued of its type by the State of Idaho. FRS is eager and willing to work with DEQ in the processing of this application. FRS has already permitted the same equipment in the State of Montana as a portable source. For the convenience of DEQ the Montana air quality permit is attached as Appendix G. Please note that the Montana rules classified the unit as an “incinerator,” subject to additional permitting requirements including a health risk assessment.

Permit Application Fee - Enclosed is a check in the amount of \$1,000 for the permit application fee. FRS understands there may be additional processing fees assessed to the project before an air quality permit is issued. FRS requests a determination to see if this project would fall under the category of general permits, with the associated \$500 fee. FRS also requests a determination be made whether any emissions from the unit that occur during allowable open burning times should be aggregated or not aggregated with those emissions that occur under permit during open burning closures for the purposes of calculating annual operating fees. (i.e., do emissions that could be considered open burning count in calculating emissions for annual permit fees.)

If the Department has any questions or comments on this application, please contact me at 406-442-5768, or Jeff Haskell of FRS at 406-799-3564.

Sincerely,
BISON ENGINEERING, INC.



Chris Hiltunen
Project Engineer

cc: Jeff Haskell - FRS

Attachments:

- Appendix A: PTC Application Forms
- Appendix B: Air Burners, LLC Spec Sheet for S-220
- Appendix C: Emissions Inventory
- Appendix D: Emission Factor References and Reports
- Appendix E: SCREEN3 Model Information for Criteria Pollutants
- Appendix F: SCREEN3 Model Information for Toxic Air Pollutants
- Appendix G: Montana Air Quality Permit Issued to FRS



Appendix A: PTC Application Forms

**INTERNAL USE ONLY - STATIONARY SOURCE PROGRAM
FEES RECEIVED FROM FACILITY**

<p>Date Stamp (Date Received in Program Office)</p> <p align="center"> RECEIVED MAR 10 2008 Department of Environmental Quality State Air Program </p>	
Facility Name	FUELS REDUCTION SERVICES
Facility Location	PORTABLE - (HOGTRST) GREAT FALLS, MT)
Fee Type:	
PTC Application Fee	<input checked="" type="checkbox"/> Amount Received: \$1,000
PTC Processing Fee	<input type="checkbox"/> Amount Received:
T2 Processing Fee	<input type="checkbox"/> Amount Received:
PBR Registration Fee	<input type="checkbox"/> Amount Received:
Check Number	#1049
Check Date	12/20/07
Total Amount of Check	\$1,000
Signature/Date of Person Receiving	P. Heitman 3/10/08



DEQ AIR QUALITY PROGRAM
 1410 N. Hilton, Boise, ID 83706
 For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION

Revision 3
 04/03/07

Please see instructions on page 2 before filling out the form.

COMPANY NAME, FACILITY NAME, AND FACILITY ID NUMBER

1. Company Name Fuels Reduction Services, LLC
2. Facility Name 3. Facility ID No.
4. Brief Project Description - Portable air curtain burner for disposal of wood-waste or forest slash.
 One sentence or less

PERMIT APPLICATION TYPE

5. ☒ New Facility ☐ New Source at Existing Facility ☐ Unpermitted Existing Source
☐ Modify Existing Source: Permit No.:____ Date Issued:____
☐ Required by Enforcement Action: Case No.:____
6. ☒ Minor PTC ☐ Major PTC

FORMS INCLUDED

Included	N/A	Forms	DEQ Verify
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form GI – Facility Information	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form EU0 – Emissions Units General	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form EU1 - Industrial Engine Information Please Specify number of forms attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU2 - Nonmetallic Mineral Processing Plants Please Specify number of forms attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU3 - Spray Paint Booth Information Please Specify number of forms attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU4 - Cooling Tower Information Please Specify number of forms attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU5 – Boiler Information Please Specify number of forms attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form HMAP – Hot Mix Asphalt Plant Please Specify number of forms attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form CBP - Concrete Batch Plant Please Specify number of forms attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form BCE - Baghouses Control Equipment	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form SCE - Scrubbers Control Equipment	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Forms EI-CP1 - EI-CP4 - Emissions Inventory– criteria pollutants (Excel workbook, all 4 worksheets)	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	PP – Plot Plan	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Forms MI1 – MI4 – Modeling (Excel workbook, all 4 worksheets)	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form FRA – Federal Regulation Applicability	<input type="checkbox"/>

DEQ USE ONLY

Date Received

Project Number

Payment / Fees Included?

Yes ☐ No ☐

Check Number



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PERMIT TO CONSTRUCT APPLICATION

Revision 3
 03/26/07

Please see instructions on page 2 before filling out the form.

All information is required. If information is missing, the application will not be processed.

IDENTIFICATION

1. Company Name	Fuels Reduction Services L.L.C.
2. Facility Name (if different than #1)	
3. Facility I.D. No.	
4. Brief Project Description:	Portable air curtain burner for disposal of wood-waste or forest slash.

FACILITY INFORMATION

5. Owned/operated by: (✓ if applicable)	<input type="checkbox"/> Federal government <input type="checkbox"/> County government <input type="checkbox"/> State government <input type="checkbox"/> City government
6. Primary Facility Permit Contact Person/Title	Jeff Haskell
7. Telephone Number and Email Address	406-799-3564, 406-799-0141, jhaskell@bresnan.net
8. Alternate Facility Contact Person/Title	
9. Telephone Number and Email Address	
10. Address to which permit should be sent	1104 35 th Ave NE
11. City/State/Zip	Great Falls, MT 59404
12. Equipment Location Address (if different than #10)	portable
13. City/State/Zip	
14. Is the Equipment Portable?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
15. SIC Code(s) and NAISC Code	Primary SIC: 0851 Secondary SIC (if any): NAICS: 115310
16. Brief Business Description and Principal Product	Air curtain burner used as a cleaner alternative to open burning for cleanup of forest slash.
17. Identify any adjacent or contiguous facility that this company owns and/or operates	None

PERMIT APPLICATION TYPE

18. Specify Reason for Application	<input checked="" type="checkbox"/> New Facility <input type="checkbox"/> New Source at Existing Facility <input type="checkbox"/> Unpermitted Existing Source <input type="checkbox"/> Modify Existing Source: Permit No.: _____ Date Issued: _____ <input type="checkbox"/> Permit Revision <input type="checkbox"/> Required by Enforcement Action: Case No.: _____
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CERTIFICATION

IN ACCORDANCE WITH IDAPA 58.01.01.123 (RULES FOR THE CONTROL OF AIR POLLUTION IN IDAHO), I CERTIFY BASED ON INFORMATION AND BELIEF FORMED AFTER REASONABLE INQUIRY, THE STATEMENTS AND INFORMATION IN THE DOCUMENT ARE TRUE, ACCURATE, AND COMPLETE.		
19. Responsible Official's Name/Title	Jeff Haskell, Owner	
20. RESPONSIBLE OFFICIAL SIGNATURE		Date: 2-8-08
21. <input checked="" type="checkbox"/> Check here to indicate you would like to review a draft permit prior to final issuance.		



DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
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Air Permit Hotline – 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION

Revision 3
03/27/07

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

Company Name: Fuels Reduction Services	Facility Name:	Facility ID No:
Brief Project Description:		Portable air curtain burner for disposal of wood-waste or forest slash.

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

1. Emissions Unit (EU) Name:	AIR CURTAIN BURNER		
2. EU ID Number:	EU1		
3. EU Type:	<input checked="" type="checkbox"/> New Source <input type="checkbox"/> Unpermitted Existing Source <input type="checkbox"/> Modification to a Permitted Source -- Previous Permit #: Date Issued:		
4. Manufacturer:	AIR BURNERS, LLC		
5. Model:	S-220		
6. Maximum Capacity:	6 TONS/HOUR WOOD WASTE		
7. Date of Construction:	2007		
8. Date of Modification (if any)			
9. Is this a Controlled Emission Unit?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If Yes, complete the following section. If No, go to line 18.		

EMISSIONS CONTROL EQUIPMENT

10. Control Equipment Name and ID:	None					
11. Date of Installation:		12. Date of Modification (if any):				
13. Manufacturer and Model Number:						
14. ID(s) of Emission Unit Controlled:						
15. Is operating schedule different than emission units(s) involved?	<input type="checkbox"/> Yes <input type="checkbox"/> No					
16. Does the manufacturer guarantee the control efficiency of the control equipment?	<input type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, attach and label manufacturer guarantee)					
Control Efficiency	Pollutant Controlled					
	PM	PM10	SO ₂	NO _x	VOC	CO

17. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

18. Actual Operation	8 HRS/DAY
19. Maximum Operation	24 HRS/DAY

REQUESTED LIMITS

20. Are you requesting any permit limits?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If Yes, check all that apply below)
<input type="checkbox"/> Operation Hour Limit(s):	
<input type="checkbox"/> Production Limit(s):	
<input type="checkbox"/> Material Usage Limit(s):	
<input type="checkbox"/> Limits Based on Stack Testing	Please attach all relevant stack testing summary reports
<input type="checkbox"/> Other:	
21. Rationale for Requesting the Limit(s):	



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Air Permit Hotline – 1-877-5PERMIT

Emissions Units - Industrial Engine Information **Form EU1**
PERMIT TO CONSTRUCT APPLICATION

Revision 3
03/27/07

Please see instructions on page 2 before filling out the form.

IDENTIFICATION				
Company Name: Fuels Reduction Services		Facility Name:		Facility ID No:
Brief Project Description:		Portable air curtain burner for disposal of wood-waste or forest		
EXEMPTION				
Please refer to IDAPA 58.01.01.222.01.c and d for a list of internal combustion engines that are exempt from the Permit to Construct requirements.				
ENGINE (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS				
1. Type of Unit: <input checked="" type="checkbox"/> New Unit <input type="checkbox"/> Unpermitted Existing Unit <input type="checkbox"/> Modification to a Unit with Permit #: _____ Date Issued: _____				
2. Use of Engine: <input checked="" type="checkbox"/> Normal Operation <input type="checkbox"/> Emergency <input type="checkbox"/> Back-up <input type="checkbox"/> Other: _____				
3. Engine ID Number:		4. Rated Power: <input checked="" type="checkbox"/> 59 Brake Horsepower(bhp) <input type="checkbox"/> Kilowatts(kW)		
5. Construction Date: 2007		6. Manufacturer: Kubota		7. Model: V2003-TE
8. Date of Modification (if applicable):		9. Serial Number (if available): Not Available		10. Control Device (if any): None
FUEL DESCRIPTION AND SPECIFICATIONS				
11. Fuel Type	<input checked="" type="checkbox"/> Diesel Fuel (#) (gal/hr)	<input type="checkbox"/> Gasoline Fuel (gal/hr)	<input type="checkbox"/> Natural Gas (cf/hr)	<input type="checkbox"/> Other Fuels (unit:)
12. Full Load Consumption Rate	2.5			
13. Actual Consumption Rate	2			
14. Sulfur Content wt%	0.5	N/A	N/A	
OPERATING LIMITS & SCHEDULE				
15. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):				
16. Operating Schedule (hours/day, months/year, etc.):				



DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline - 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATIONRevision 3
4/5/2007

Please see instructions on page 2 before filling out the form.

Company Name:	Fuels Reduction Services
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Facility Name:

Facility ID No.:

Brief Project Description:	Portable air curtain burner for disposal of wood-waste or forest slash.
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SUMMARY OF FACILITY WIDE EMISSION RATES FOR CRITERIA POLLUTANTS - POINT SOURCES

1.	2.	3.											
		PM ₁₀		SO ₂		NO _x		CO		VOC		Lead	
Emissions units	Stack ID	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Point Source(s)													
Air Curtain Burner	EU01	0.90	3.94	0.60	2.63	2.40	10.51	7.80	34.16	0.92	4.02	0.02	0.07
Diesel Engine Powered Fan	EU02	0.13	0.57	0.12	0.54	1.83	8.01	0.40	1.73	0.15	0.65		
(insert more rows as needed)													
Total		1.03	4.51	0.72	3.17	4.23	18.52	8.20	35.89	1.07	4.67	0.02	0.07

	IDEQ AIR QUALITY PROGRAM 1410 N. Hilton, Boise, ID 83706 For assistance, call the Air Permit Hotline - 1-877-5PERMIT	PERMIT TO CONSTRUCT APPLICATION Revision 3 4/5/2007
Please see instructions on page 2 before filling out the form.		
Company Name:	Fuels Reduction Services	
Facility Name:		
Facility ID No.:		
Brief Project Description:	Portable air curtain burner for disposal of wood-waste or forest slash.	
SUMMARY OF FACILITY WIDE EMISSION RATES FOR CRITERIA POLLUTANTS - POINT SOURCES		
1.	2.	3.
		PM ₁₀ SO ₂ NO _x CO VOC Lead
Emissions units	Stack ID	lb/hr T/yr lb/hr T/yr lb/hr T/yr lb/hr T/yr lb/hr T/yr lb/hr T/yr lb/hr T/yr
Point Source(s)		


Instructions for Form EI-CP1


This form is designed to provide the permit writer and air quality modeler with a summary of the criteria pollutant emissions of each emission unit/point located at the facility. This information may be used by the IDEQ to perform an air quality analysis or to review an air quality analysis submitted with the permit application or requested by the IDEQ.

Please fill in the same company name, facility name, facility ID number, and brief project description as on form CS in the boxes provided. This is useful in case any pages of the application get separated.

1. Provide the name of all emission units at the facility. This name must match names on other submittals to IDEQ and within this application.
2. Provide the identification number for the stack which the emission unit exits.
3. Provide the emission rate in pounds per hour and tons per year for all criteria pollutants emitted by this point source. In this form, emission rates for a point source are the maximum allowable emissions for both short term (pounds per hour) and long term (tons per year). These emission rates are its permitted limits (if any). Otherwise, potential to emit should be shown. Potential to emit is defined as uncontrolled emissions at maximum design or achievable capacity (whichever is higher) and year-round continuous operation (8760 hours per year) if there are no federally enforceable permit limits on the emission point. If the emission point has or will have control equipment or some other proposed permit limitation such as hours of operation or material usage, the control efficiency or proposed permit limit(s) may be used in calculating potential to emit.

NOTE: Attach a separate sheet of paper, or electronic file, to provide additional documentation on the development of the emission rates. Documentation can include emissions factors, throughput, and example calculations.

	DEQ AIR QUALITY PROGRAM 1410 N. Hilton, Boise, ID 83706 For assistance, call the Air Permit Hotline - 1-877-5PERMIT	PERMIT TO CONSTRUCT APPLICATION Revision 2 4/5/2007											
Please see instructions on page 2 before filling out the form.													
Company Name:		Fuels Reduction Services											
Facility Name:													
Facility ID No.:													
Brief Project Description:		Portable air curtain burner for disposal of wood-waste or forest slash.											
SUMMARY OF FACILITY WIDE EMISSION RATES FOR CRITERIA POLLUTANTS - FUGITIVE SOURCES													
1.	2.	3.											
		PM ₁₀		SO ₂		NO _x		CO		VOC		Lead	
Fugitive Source Name	Fugitive ID	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Fugitive Source(s)													
name of fugitive source1	None												
name of fugitive source2													
name of fugitive source3													
name of fugitive source4													
name of fugitive source5													
name of fugitive source6													
name of fugitive source7													
name of fugitive source8													
name of fugitive source9													
name of fugitive source10													
name of fugitive source11													
name of fugitive source12													
name of fugitive source13													
name of fugitive source14													
name of fugitive source15													
name of fugitive source16													
name of fugitive source17													
name of fugitive source18													
name of fugitive source19													
name of fugitive source20													
name of fugitive source21													
(insert more rows as needed)													
Total													

	IDEQ AIR QUALITY PROGRAM 1410 N. Hilton, Boise, ID 83706 For assistance, call the Air Permit Hotline - 1-877-5PERMIT	PERMIT TO CONSTRUCT APPLICATION Revision 2 4/5/2007
Please see instructions on page 2 before filling out the form.		
Company Name:	Fuels Reduction Services	
Facility Name:		
Facility ID No.:		
Brief Project Description:	Portable air curtain burner for disposal of wood-waste or forest slash.	
SUMMARY OF FACILITY WIDE EMISSION RATES FOR CRITERIA POLLUTANTS - FUGITIVE SOURCES		
1.	2.	3.
		<div style="display: flex; justify-content: space-around; font-weight: bold; font-size: small;"> PM₁₀ SO₂ NO_x CO VOC Lead </div>
Fugitive Source Name	Fugitive ID	Fugitive Source(s)
		<div style="display: flex; justify-content: space-around; font-size: x-small;"> lb/hr T/yr lb/hr T/yr lb/hr T/yr lb/hr T/yr lb/hr T/yr lb/hr T/yr </div>

Instructions for Form EI-CP2

This form is designed to provide the permit writer and air quality modeler with a summary of the criteria pollutant emissions of each emission unit/point located at the facility. This information may be used by the IDEQ to perform an air quality analysis or to review an air quality analysis submitted with the permit application or requested by the IDEQ.

Please fill in the same company name, facility name, facility ID number, and brief project description as on form CS in the boxes provided. This is useful in case any pages of the application get separated.

Fugitive emissions are those emissions that cannot reasonably be made to pass through a stack or vent or equivalent opening. Examples include coal piles, unpaved roads, etc. Fugitive emission sources at your plant must be included in this form.

1. Provide the name of all fugitive sources at the facility. This name must match names on other submittals to IDEQ and within this application.
2. Provide the identification number for the fugitive source. This ID number should match ID numbers on other submittals to IDEQ and within this application.
3. Provide the emission rate in pounds per hour and tons per year for all criteria pollutants emitted by this fugitive source. In this form, emission rates for a fugitive source are the maximum allowable emissions for both short term (pounds per hour) and long term (tons per year). These emission rates are its permitted limits (if any). Otherwise, potential to emit should be shown. Potential to emit is defined as uncontrolled emissions at maximum design or achievable capacity (whichever is higher) and year-round continuous operation (8760 hours per year) if there are no federally enforceable permit limits on the emission point. If the emission point has or will have control equipment or some other proposed permit limitation such as hours of operation or material usage, then, the control efficiency or proposed permit limit(s) may be used in calculating potential to emit.

NOTE: Attach a separate sheet of paper, or electronic file, to provide additional documentation on the development of the emission rates. Documentation can include emissions factors, throughput, and example calculations.



DEQ AIR QUALITY PROGRAM
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For assistance, call the
Air Permit Hotline - 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION

Revision 3
4/5/2007

Please see instructions on page 2 before filling out the form.

Company Name:

Facility Name:

Facility ID No.:

Brief Project Description:

SUMMARY OF EMISSIONS INCREASE (PROPOSED PTE - PREVIOUSLY MODELED PTE) - POINT SOURCES

1.	2.	3.											
		PM ₁₀		SO ₂		NO _x		CO		VOC		Lead	
Emissions units	Stack ID	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Point Source(s)													
name of the emissions unit1	None												
name of the emissions unit2													
name of the emissions unit3													
name of the emissions unit4													
name of the emissions unit5													
name of the emissions unit6													
name of the emissions unit7													
name of the emissions unit8													
name of the emissions unit9													
name of the emissions unit10													
name of the emissions unit11													
name of the emissions unit12													
name of the emissions unit13													
name of the emissions unit14													
name of the emissions unit15													
name of the emissions unit16													
name of the emissions unit17													
name of the emissions unit18													
name of the emissions unit19													
name of the emissions unit20													
name of the emissions unit21													
(insert more rows as needed)													
Total													



IDEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline - 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION

Revision 3
4/5/2007

Please see instructions on page 2 before filling out the form.

Company Name:

Facility Name:

Facility ID No.:

Brief Project Description:

SUMMARY OF EMISSIONS INCREASE (PROPOSED PTE - PREVIOUSLY MODELED PTE) - POINT SOURCES

1.	2.	3.											
		PM ₁₀		SO ₂		NO _x		CO		VOC		Lead	
Emissions units	Stack ID	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Point Source(s)													

Instructions for Form EI-CP3

This form is designed to provide the permit writer and air quality modeler with a summary of the change in criteria pollutant emissions of each emission unit/point associated with this permit application. This information may be used by the IDEQ to perform an air quality analysis or to review an air quality analysis submitted with the permit application or requested by the IDEQ.

Please fill in the same company name, facility name, facility ID number, and brief project description as on form CS in the boxes provided. This is useful in case any pages of the application get separated.

1. Provide the name of the emission unit. This name should match names on other submittals to IDEQ and within this application.
2. Provide the identification number for the stack which the emission unit exits.
3. Provide the increase in emissions in pounds per hour and tons per year for all criteria pollutants emitted by this emission unit. In this form, increase in emissions for an emission unit are the proposed PTE - Previously modeled PTE. If the emission point has or will have control equipment or some other proposed permit limitation such as hours of operation or material usage, then, the control efficiency or proposed permit limit(s) may be used in calculating proposed potential to emit.

NOTE: Attach a separate sheet of paper, or electronic file, to provide additional documentation on the development of the emission rates. Documentation can include emissions factors, throughput, and example calculations.



DEQ AIR QUALITY PROGRAM
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PERMIT TO CONSTRUCT APPLICATION

Revision 3
4/5/2007

Please see instructions on page 2 before filling out the form.

Company Name:

Facility Name:

Facility ID No.:

Brief Project Description:

SUMMARY OF EMISSIONS INCREASE (PROPOSED PTE - PREVIOUSLY MODELED PTE) - FUGITIVE SOURCES

1.	2.	3.											
		Air Pollutant Maximum Change in Emissions Rate (lbs/hr or t/yr)											
		PM ₁₀		SO ₂		NO _x		CO		VOC		Lead	
Fugitive Source Name	Fugitive ID	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Fugitive Source(s)													
name of fugitive source1	None												
name of fugitive source2													
name of fugitive source3													
name of fugitive source4													
name of fugitive source5													
name of fugitive source6													
name of fugitive source7													
name of fugitive source8													
name of fugitive source9													
name of fugitive source10													
name of fugitive source11													
name of fugitive source12													
name of fugitive source13													
name of fugitive source14													
name of fugitive source15													
name of fugitive source16													
name of fugitive source17													
name of fugitive source18													
name of fugitive source19													
name of fugitive source20													
name of fugitive source21													
(insert more rows as needed)													
Total													



IDEQ AIR QUALITY PROGRAM
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For assistance, call the
Air Permit Hotline - 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION

Revision 3
4/5/2007

Please see instructions on page 2 before filling out the form.

Company Name:	
Facility Name:	
Facility ID No.:	
Brief Project Description:	

SUMMARY OF EMISSIONS INCREASE (PROPOSED PTE - PREVIOUSLY MODELED PTE) - FUGITIVE SOURCES

1.	2.	3. Air Pollutant Maximum Change in Emissions Rate (lbs/hr or t/yr)											
		PM ₁₀		SO ₂		NO _x		CO		VOC		Lead	
Fugitive Source Name	Fugitive ID	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr

Fugitive Source(s)


Instructions for Form EI-CP4

This form is designed to provide the permit writer and air quality modeler with a summary of the change in criteria pollutant emissions of each emission unit/point associated with this permit application. This information may be used by the IDEQ to perform an air quality analysis or to review an air quality analysis submitted with the permit application or requested by the IDEQ.

Please fill in the same company name, facility name, facility ID Number, and brief project description as on Form CS in the boxes provided. This is useful in case any pages of the application get separated.

1. Provide the name of the emission unit. This name should match names on other submittals to IDEQ and within this application.
2. Provide the identification number for the fugitive source. This ID should match IDs on other submittals to IDEQ and within this application.
3. Provide the increase in emissions in pounds per hour and tons per year for all criteria pollutants emitted by this fugitive source. In this form, increase in emissions for an emission unit are the proposed PTE - Previously modeled PTE. If the fugitive source has or will have control equipment or some other proposed permit limitation such as hours of operation or material usage, the control efficiency or proposed permit limit(s) may be used in calculating proposed potential to emit.

NOTE: Attach a separate sheet of paper, or electronic file, to provide additional documentation on the development of the emission rates. Documentation can include emissions factors, throughput, and example calculations.

	DEQ AIR QUALITY PROGRAM 1410 N. Hilton, Boise, ID 83706 For assistance, call the Air Permit Hotline - 1-877-5PERMIT		PERMIT TO CONSTRUCT APPLICATION Revision 3 4/5/2007					
	<i>Please see instructions on page 2 before filling out the form.</i>							
Company Name:	Fuels Reduction Services							
Facility Name:								
Facility ID No.:								
Brief Project Description:	Portable air curtain burner for disposal of wood-waste or forest slash.							
SUMMARY OF AIR IMPACT ANALYSIS RESULTS - CRITERIA POLLUTANTS								
		1.		2.	3.	4.		5.
Criteria Pollutants	Averaging Period	Significant Impact Analysis Results (µg/m3)	Significant Contribution Level (µg/m3)	Full Impact Analysis Results (µg/m3)	Background Concentration (µg/m3)	Total Ambient Impact (µg/m3)	NAAQS (µg/m3)	Percent of NAAQS
PM ₁₀	24-hour	0.65	5				150	
	Annual	0.13	1				50	
SO ₂	3-hr	1.15	25				1300	
	24-hr	0.46	5				365	
	Annual	0.09	1				80	
NO ₂	Annual	0.54	1				100	
CO	1-hr	13.10	2000				10000	
	8-hr	13.10	500				40000	



DEQ AIR QUALITY PROGRAM
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Air Permit Hotline – 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION

Revision 3
 03/26/07

Please see instructions on page 2 before filling out the form.

IDENTIFICATION		
Company Name: Fuels Reduction Services	Facility Name:	Facility ID No:
Brief Project Description: Portable air curtain burner for disposal of wood-waste or forest slash.		
APPLICABILITY DETERMINATION		
1. Will this project be subject to 1990 CAA Section 112(g)? (Case-by-Case MACT)	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> YES* * If YES, applicant must submit an application for a case-by-case MACT determination [IAC 567 22-1(3)"b" (8)]
2. Will this project be subject to a New Source Performance Standard? (40 CFR part 60)	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> YES* *If YES, please identify sub-part: <u>CCCC</u>
3. Will this project be subject to a MACT (<u>M</u> aximum <u>A</u> chievable <u>C</u> ontrol <u>T</u> echnology) regulation? (40 CFR part 63)	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> YES* *If YES, please identify sub-part: _____
THIS ONLY APPLIES IF THE PROJECT EMITS A HAZARDOUS AIR POLLUTANT		
4. Will this project be subject to a NESHAP (<u>N</u> ational <u>E</u> mission <u>S</u> tandards for <u>H</u> azardous <u>A</u> ir <u>P</u> ollutants) regulation? (40 CFR part 61)	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> YES* *If YES, please identify sub-part: _____
5. Will this project be subject to PSD (<u>P</u> revention of <u>S</u> ignificant <u>D</u> eterioration)? (40 CFR section 52.21)	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> YES
6. Was netting done for this project to avoid PSD?	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> YES* *If YES, please attach netting calculations
IF YOU ARE UNSURE HOW TO ANSWER ANY OF THESE QUESTIONS, CALL THE AIR PERMIT HOTLINE AT 1-877-5PERMIT		

Appendix B: Air Burners, LLC Spec Sheet for S-220



TECHNICAL MEMORANDUM

THE PRINCIPLE OF AIR CURTAIN INCINERATION

OPERATION

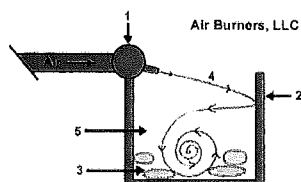
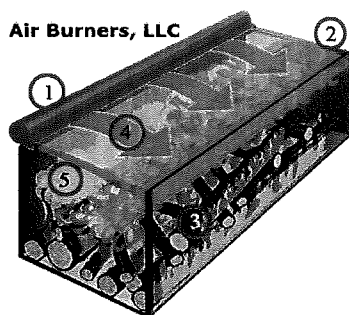
The operating principle of the air curtain within an incineration device lies in the introduction of controlled high velocity air across the upper portion of the combustion chamber in which clean wood waste is loaded. The powerful curtain of air created in this process traps unburned particles under the curtain in the high temperature zone where temperatures can reach 1,832° F (1,000° C).

The increased combustion time and turbulence result in a re-burn of the trapped particles or smoke. The escaping particulates are reduced to near their base elements. The resulting emissions from a properly operating air curtain burner will have an opacity rate below 10 percent during most steady state operations.



S-327 Firebox in Full Operation

For proper operation, the air curtain machine has to be designed to provide a curtain of air over the fire that has a mass flow and velocity that are in balance with the potential mass flow and velocity of the burning wood waste. If the curtain velocity is too high the box or trench can become over pressurized and over agitated. The higher pressure will lift the curtain and cause it to become ineffective. The over agitation will cause embers and ash to be blown out of the box or pit past the ineffective curtain. If the mass flow of the curtain is too low then the unburned particles (smoke) will penetrate the curtain on account of the high velocity of the hot gasses being generated from the burning wood.



The Principle of Air Curtain Incineration *"The Wood Waste Is The Fuel"*

1. Air curtain machine manifold and nozzles directing high velocity air flow into refractory lined fire box or earthen trench.
2. Refractory lined wall as on the S-Series machines, or earthen wall as used with the T-Series trench burners.
3. Material to be burned.
4. Initial airflow forms a high velocity "curtain" over fire.
5. Continued air flow over-oxygenates fire keeping temperatures high. Higher temperatures provide a cleaner and more complete burn.

APPLICATION

The ash from typical wood waste is a very useful soil additive, and as such offers a commodity that can be marketed to plant nurseries, farms, etc. as a potting soil additive. This beneficial reuse aspect of the residual ash may be important to the overall profitability of the Air Burners System in certain applications. Recycling our resources is not only socially and politically imperative, but it often reaps the additional benefit of tax incentives or tax credits. Solid waste landfills are diminishing rapidly, and permits are difficult to secure for new sites. The Air Burners System provides an affordable and environmentally sound alternative to indiscriminate depositing of wood debris into landfills.

In the past, diseased animal carcasses were usually buried and forgotten. Little was known about the agents that caused the deadly diseases that have wiped out many herds of cattle and entire chicken farms. What is important to understand is that certain pathogens have been known to survive more than fifty years in the soil where they have been buried along with animal carcasses that perished from the disease. The most practical approach to the elimination of diseased carcasses is high temperature incineration best in the fields, so the carcasses do not need to be transported. Air Burners Air Curtain Systems are ideally suited for this task and have repeatedly been employed for that purpose with the approval of the US, Canadian and many other foreign governments.

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Air Burners, LLC

4390 Cargo Way, Palm City, FL 34990 – (772) 220-7303 – (888)-566-3900

<http://www.airburners.com/> info@airburners.com

AIR BURNERS, LLC

S-220 FIRE BOX SPECIFICATIONS

General: A self contained, completely assembled above ground Air Curtain Incinerator (air curtain burner) with a refractory lined firebox for permanent (stationary) installations or for applications requiring a portable unit. Designed for the high temperature burning of yard trash, forest slash, land clearing debris and untreated wood waste with performance exceeding the requirements of US EPA 40CFR60.

Shipped from the factory completely assembled ready for immediate use and does not require disassembly for relocation. These fireboxes are also used for disaster recovery and Homeland Security contingencies and for certain MSW disposal applications. Electrically powered version available for permanent (stationary) installations.

1	Power Source	Four cylinder Diesel Engine 59 HP (Kubota V2003-TE or equivalent engine), full enclosure; security locks around power source; Emission certified US EPA Tier 2 & EC Stage 2	
2	Drive Train	Engine mounted PTO (Power-take-off) with direct coupling drive to fan; Manual engage / disengage lever	
3	Burn Container (Firebox)	4" (102 mm) thick walls; Refractory panels filled with proprietary thermal ceramic material cast into steel trays; panels kiln cured before assembly with proprietary stress relieving and crack propagation reduction features; 2 full height rear doors with 2 hinges each and safety latch feature; 1 ignition hole with safety hatch	
4	Safety Systems	Low oil pressure shutdown: Over temperature shut down: Loss of cooling fluid shutdown.	
5	Electrical System	12 V DC with engine mounted alternator	
6	Instrument Panel	Key switch, tachometer, hour meter, fuel gauge, oil pressure and water temperature indicators with safety shutdown feature and adjustable locking throttle; lockable instrument panel	
7	Fan	Custom fan	
8	Manifold	Welded 10 gauge steel assembly	
9	Skid Deck / Equipment Deck	½" (12.7 mm) steel plate, all solid-weld construction equipment deck with protective brush and ember guard; proprietary "cool wall" ventilated firewall for operator and equipment protection; diamond plate anti-slip top surface. Full engine enclosure to protect against debris build-up which may become a fire hazard and to provide operator safety from rotating parts. Fully enclosed bottom surface to minimize ground pressure	
10	Miscellaneous	65 gallon (265 liters) minimum fuel tank capacity	
11	Air Quality	Meets or exceeds applicable US-EPA regulations	
12	Transportation & Set-up	Shipped completely assembled - No on-site set-up; Ready for immediate use; Transportable by "tilt-bed trailer", "sliding-axle trailer", standard flatbed or other such trailer systems; Unit is skid mounted and it has no floor; 2 doors in back; Lifting pads provided for crane lifting	
13	Options	Ember screen; For permanent installations: Electric motor; Heat recovery	
14	Average Through-put	3-6 Tons per Hour	
15	Fuel Consumption	Approx. 2.5 Gal/Hr. (9.5 L/Hr.)	
16	Weight	33,000 lbs (15,000kg)	
17	Dimensions	Overall Size L x W x H	Fire Box L x W x H
		30' 2" x 8' 6" x 8' 6" (9.2m x 2.6m x 2.6m)	19' 8" x 6.2' x 7' 1" (6m x 1.9m x 2.2m)

Note: All weights and dimensions are approximate and metric conversions are rounded. Subject to change without notice.

AIR BURNERS, LLC
 4390 Cargo Way, Palm City, FL 34990
 Phone 772-220-7303 - FAX 772-220-7302
 E-mail: info@airburners.com - www.airburners.com

Rev. 0905a

Air Burners, LLC S-Series (Firebox) Air Curtain Burners Dimensions

AIR BURNERS, LLC S-SERIES FIRE BOX SYSTEM DIMENSIONS					
Model	Overall Size <i>L × W × H</i>	Fire Box <i>L × W × H</i>	Weight	Fuel Consumption*	Through-put**
S-327	37' 4" × 11' 10" × 9' 7"	27' 2" × 8' 5" × 8' 1"	50,000 lbs.	3.5 gal/hr	6-10 tons/hr
	11.4m × 3.6m × 2.9m	8.3m × 2.6m × 2.46m	22,700 kg	13.3 L/hr	
S-321	31' 4" × 11' 10" × 9' 7"	21' 2" × 8' 5" × 8' 1"	46,000 lbs.	3.0 gal/hr	5-8 tons/hr
	9.6m × 3.8m × 2.9m	6.5m × 2.6m × 2.46m	20,900 kg	11.4 L/hr	
S-220	30' 2" × 8' 6" × 8' 6"	19' 8" × 6' 2" × 7' 1"	33,500 lbs.	2.5 gal/hr	3-6 tons/hr
	9.2m × 2.6m × 2.6m	6m × 1.9m × 2.2m	15,200 kg	9.5 L/hr	
S-217	27' × 8' 6" × 8' 6"	16' 5" × 6' 2" × 7' 1"	30,000 lbs.	2.5 gal/hr	2-5 tons/hr
	8.2m × 2.6m × 2.6m	5m × 1.9m × 2.2m	13,600 kg	9.5 L/hr	
S-116	27' × 7' 5" × 7' 8"	16' × 5' × 6'	26,000 lbs.	2.3 gal/hr	1-4 tons/hr
	8.2m × 2.2m × 2.3m	4.9m × 1.5m × 1.8m	11,800 kg	8.7 L/hr	
S-111	8.2m × 2.2m × 2.3m	11' × 5' × 6'	21,300 lbs.	2.3 gal/hr	0.5-2 ton/hr
	6.6m × 2.2m × 2.3m	3.35m × 1.5m × 1.8m	9,700 kg	8.3 L/hr	

*) Diesel Engine Version: S-300 Series: Kubota V3300-TE (Tier2).
S-200/S-100 Series: Kubota V2003-TE (Tier2), or equivalent engines. Diesel fuel consumption rated at average operating RPM.
Drive System: PTO & mechanical direct coupling drive.
Fuel Tank: Min. 65 Gallons or 246 liters.

**) Notes on Through-put: Through-put depends on many factors, such as nature and type of wood waste, its moisture content, prescribed opacity limits, operator skills, elevation of location, etc. The figures stated here are guidelines only. If more specific information is required, please, contact the Factory.

Electric Motor Version: Motor: 3-Phase, heavy-duty, with enclosed speed controller;
Min. 200V, max. 460V, 50Hz to 60Hz;
Drive System: Mechanical direct coupling drive

Options: Top firebox screen (retractable firebox top safety mesh cover); Engine deck security guarding; Heat recovery; Custom designs available.

NOTE: 1) All weights and dimensions are approximate. Metric conversions rounded.
2) Dimensional drawings can be provided on request.
3) Subject to change without notice.

AIR BURNERS, LLC

4390 Cargo Way - Palm City, FL 34990 - 772-220-7303 - FAX 772-220-7302 info@airburners.com

Rev.07-2007(US)

Appendix C: Emissions Inventory

APPENDIX C
Emissions Summary

Fuels Reduction Services
Air Curtain Burner Air Permit Application
Emissions Summary

Criteria Pollutant Emissions (tons/yr) - Overall Operations - PTE							
Emission Source	PM	PM ₁₀	NOx	SO ₂	CO	VOC	Lead
EU01 Air Curtain Burner	5.26	3.94	10.51	2.63	34.16	4.02	0.07
EU02 Diesel Engine Powered Fan	0.57	0.57	8.01	0.54	1.73	0.65	0.01
Total Criteria Pollutant PTE:	5.82	4.51	18.52	3.17	35.90	4.67	0.08

APPENDIX C
Emissions Calculations

**Fuels Reduction Services
Air Curtain Incinerator Air Permit Application
Emission Calculations**

EU01 Air Curtain Burner Emissions

The emission factors used to develop the incinerator criteria pollutant emission inventory are referenced from various technical documents prepared specifically for air curtain type destructors and from applicable sections of AP-42 characterizing emissions based on typical materials combusted from the proposed source.

Permitted Production Capacity: 6 ton/hr (Capacity Operations)
Operating Hours: 8760 hr/yr

PM Emissions

Emission Factor: 0.20 lb/ton (Ref. Air Pollution Emissions Factors for Above-Ground, Refractory Lined Air Curtain Incinerators, Steven Smallwood, PE, 7/12/05)
Emissions: $6 \text{ ton/hr} * 0.20 \text{ lb/ton} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} =$ **5.26 ton/yr**

PM₁₀ Emissions

Emission Factor: 0.15 lb/ton (Assumed to be 75% of PM)
Emissions: $6 \text{ ton/hr} * 0.15 \text{ lb/ton} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} =$ **3.94 ton/yr**

NO_x Emissions

Emission Factor: 0.40 lb/ton (Ref. Air Pollution Emissions Factors for Above-Ground, Refractory Lined Air Curtain Incinerators, Steven Smallwood, PE, 7/12/05)
Emissions: $6 \text{ ton/hr} * 2.00 \text{ lb/ton} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} =$ **10.51 ton/yr**

VOC Emissions

Emission Factor: 0.15 lb/ton (Ref. AP-42, Chapter 1.6, Table 1.6-2, Wood Combustion in Boilers, (9/03)
Assumed HV of 4500 Btu/lb, Converted VOC EF from 0.017 lb/MMBtu)
Emissions: $6 \text{ ton/hr} * 0.153 \text{ lb/ton} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} =$ **4.02 ton/yr**

CO Emissions

Emission Factor: 1.30 lb/ton (Ref. Air Pollution Emissions Factors for Above-Ground, Refractory Lined Air Curtain Incinerators, Steven Smallwood, PE, 7/12/05)
Emissions: $6 \text{ ton/hr} * 1.30 \text{ lb/ton} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} =$ **34.16 ton/yr**

SO₂ Emissions

Emission Factor: 0.10 lb/ton (Ref. Air Pollution Emissions Factors for Above-Ground, Refractory Lined Air Curtain Incinerators, Steven Smallwood, PE, 7/12/05)
Emissions: $6 \text{ ton/hr} * 0.10 \text{ lb/ton} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} =$ **2.63 ton/yr**

Lead Emissions

Emission Factor: 0.0026 lb/ton (Ref. AP-42, Chapter 1.6, Table 1.6-4, Wood Combustion in Boilers, (9/03)
Assumed HV of 4500 Btu/lb, Converted Lead EF from 4.8E-5 lb/MMBtu)
Emissions: $6 \text{ ton/hr} * 0.0026 \text{ lb/ton} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} =$ **0.07 ton/yr**

APPENDIX C
Emissions Calculations

**Fuels Reduction Services
Air Curtain Incinerator Air Permit Application
Emission Calculations**

EU02 Diesel Engine Powered Fan Emissions

Power Output Capacity: 59 hp-hr (Manufacturers Specifications - Kubota V2003-TE or equivalent engine)
Hours of Operation: 8760 hr/yr (Annual Capacity)

PM Emissions

Emission Factor: 0.0022 lb/hp-hr (Ref. AP-42, Chapter 3.3, Table 3.3-1, Uncontrolled Emission Factors for Gasoline and Diesel Internal Combustion Engines, 10/96)
Emissions: $0.0022 \text{ lb/hp-hr} * 59 \text{ hp-hr} * 8760 \text{ ton/yr} * 0.0005 \text{ ton/lb} = \mathbf{0.57 \text{ ton/yr}}$

PM₁₀ Emissions

Emission Factor: 0.0022 lb/hp-hr (Ref. AP-42, Chapter 3.3, Table 3.3-1, Uncontrolled Emission Factors for Gasoline and Diesel Internal Combustion Engines, 10/96)
Emissions: $0.0022 \text{ lb/hp-hr} * 59 \text{ hp-hr} * 8760 \text{ ton/yr} * 0.0005 \text{ ton/lb} = \mathbf{0.57 \text{ ton/yr}}$

NO_x Emissions

Emission Factor: 0.0310 lb/hp-hr (Ref. AP-42, Chapter 3.3, Table 3.3-1, Uncontrolled Emission Factors for Gasoline and Diesel Internal Combustion Engines, 10/96)
Emissions: $0.0310 \text{ lb/hp-hr} * 59 \text{ hp-hr} * 8760 \text{ ton/yr} * 0.0005 \text{ ton/lb} = \mathbf{8.01 \text{ ton/yr}}$

VOC Emissions

Emission Factor: 0.0025 lb/hp-hr (Ref. AP-42, Chapter 3.3, Table 3.3-1, Uncontrolled Emission Factors for Gasoline and Diesel Internal Combustion Engines, 10/96)
Emissions: $0.0025 \text{ lb/hp-hr} * 59 \text{ hp-hr} * 8760 \text{ ton/yr} * 0.0005 \text{ ton/lb} = \mathbf{0.65 \text{ ton/yr}}$

CO Emissions

Emission Factor: 0.0067 lb/hp-hr (Ref. AP-42, Chapter 3.3, Table 3.3-1, Uncontrolled Emission Factors for Gasoline and Diesel Internal Combustion Engines, 10/96)
Emissions: $0.0067 \text{ lb/hp-hr} * 59 \text{ hp-hr} * 8760 \text{ ton/yr} * 0.0005 \text{ ton/lb} = \mathbf{1.73 \text{ ton/yr}}$

SO_x Emissions

Emission Factor: 0.0021 lb/hp-hr (Ref. AP-42, Chapter 3.3, Table 3.3-1, Uncontrolled Emission Factors for Gasoline and Diesel Internal Combustion Engines, 10/96)
Emissions: $0.0021 \text{ lb/hp-hr} * 59 \text{ hp-hr} * 8760 \text{ ton/yr} * 0.0005 \text{ ton/lb} = \mathbf{0.54 \text{ ton/yr}}$

Lead Emissions

Emission Factor: 4.60E-05 lb/hp-hr (Ref. AP-42, Chapter 3.3, Table 3.3-1, Uncontrolled Emission Factors for Gasoline and Diesel Internal Combustion Engines, 10/96)
Emissions: $4.60\text{E-}05 \text{ lb/hp-hr} * 59 \text{ hp-hr} * 8760 \text{ ton/yr} * 0.0005 \text{ ton/lb} = \mathbf{0.01 \text{ ton/yr}}$